



CLIMATE & ENERGY PAPER SERIES **09**

THE EFFECTS OF EU CLIMATE LEGISLATION ON BUSINESS COMPETITIVENESS:

A SURVEY AND ANALYSIS

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The °Climate Group

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of the United States

STRENGTHENING TRANSATLANTIC COOPERATION

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The Climate Group is the world's first international NGO focused exclusively on the solutions to climate change. The organization believes that switching to a low carbon economy can counter the worst effects of climate change; drive new technologies; help create jobs and underpin a sustainable future for both industrialized and developing countries. In its five-year existence, the Group has looked for practical ways to influence and speed up action in this arena and have focused effort on seeking out international corporations and governments—to form a strong coalition of “members” and associates who bring a collective voice and high-level leadership to the climate change debate. In addition to international advocacy, The Climate Group produces expert research and publications, works to engage the media, and delivers high-impact events to showcase the benefits of a low-carbon world and set out the practical steps needed in policy development, technology, and market mechanisms to achieve it.

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EXECUTIVE SUMMARY

Discussions in the United States around the introduction of a cap-and-trade system to cut greenhouse gas emissions have reignited debates about the potential effects of such measures on industrial competitiveness and job security. Echoing concerns voiced a few years earlier in Europe, many U.S. businesses, unions, and lawmakers maintain that the additional cost of meeting emissions caps will put U.S. firms at a disadvantage vis-à-vis their competitors in regions where comparable regulation does not exist. Furthermore, they claim that, if output and, thereby, emissions shift to other markets, this imbalance will undermine the system's environmental effectiveness.

Recent economic analysis in both Europe and the United States has shown that potential competitiveness impacts are in reality likely to be small in the short term. This report presents qualitative evidence that backs up the analysis in these studies, based on interviews with a cross-section of leading, trade-exposed companies. Most of the respondents are energy-intensive companies with significant emissions in Europe covered by the European Union Emissions Trading System (EU ETS).

The EU ETS began in 2005 and covers emissions from power generation and energy-intensive industries, accounting for around half the EU's total emissions. During the four-and-a-half years of operation of the EU ETS, the price of carbon generated by the emissions cap has fluctuated between \$15 and \$40. This variance is a result of the perceived tightness of the cap, energy prices, and changes in overall economic activity.

The nine companies in the survey, all but one a member of the Global Fortune 500, include firms with installations directly covered by the EU ETS and others that expect indirect effects through electricity or other input prices. Taken together,

they produced about 5 percent of total verified emissions for all installations covered in the EU ETS. The survey sought to understand whether (and if so, how) a market-set price for carbon has influenced the companies' cost base, profitability, short- and medium-term strategies, and ability to compete with comparable firms operating without a constraint on their emissions.

The key findings are:

- ***The EU ETS has not resulted in significant costs to business to date, especially when compared to the impact of other factors such as energy price fluctuations and the economic downturn.*** Among companies whose direct emissions are covered by the EU ETS, none was able to quantify any negative impact on the bottom line. What costs the companies saw in the initial phase of the EU ETS were largely in line with what they had assessed prior to the introduction of cap-and-trade and were not seen as damaging. More recently, in the words of one respondent, "all other effects are being swamped by the credit crunch." Companies believe that allocation of free emission allowances and better consultation with EU authorities have helped mitigate any potential negative impacts on competitiveness. But they do not rule out future impacts if carbon prices rise, allocation methods change significantly and other countries do not adopt similar legislation.
- ***So far there has been no major impact on companies' competitiveness: they have not relocated their operations, reduced their workforce, or lost market share as a result of carbon pricing.*** To date, none of the companies with direct emissions covered by the EU ETS has decided to relocate operations elsewhere as a result of climate legislation or are considering doing so. None has cut jobs or shut down

operations as a direct result of climate-related policies, and their financial performance and global market share have not changed relative to their competitors. This suggests that carbon pricing has been a minor consideration when compared with other factors determining production location decisions, such as proximity to suppliers and customer base, transport costs, availability of skilled labor, and research capacity.

- ***One exception is the aluminum smelter, due to the predominance of electricity costs in its overall cost structure.*** This makes it particularly sensitive to electricity price increases caused by the pass-through of CO₂ costs by power generators—and may affect future production decisions, particularly as existing long-term electricity purchase contracts expire.
- ***Company decision-making has taken carbon pricing on board, but climate legislation has not led to fundamental shifts in strategy.*** The EU ETS, by putting a market price on carbon emissions, has moved the climate debate into the boardroom and the decisions of senior management, but it has not profoundly altered the way management teams run their businesses. Companies are becoming smarter about their day-to-day operations and future strategic choices, taking into account likely future shifts in policy and consumer demand.
- ***Companies have improved their monitoring and reporting of emissions and realized energy efficiency gains.*** At an operational level, a market price for carbon has led companies to improve the way they monitor and report their production costs. Both to comply with legislation and because it makes good business sense, companies are paying more attention to energy efficiency and seeing financial benefits

as a result. And some are shifting to greener product lines in response to demand from other sectors.

- ***While they have fared well so far relative to their non-EU competitors, some heavy industrial emitters fear possible competitive impacts in the third phase of the EU ETS, beginning in 2013.*** Some of the more energy-intensive companies believe that, absent the emergence of similar climate policies in their main competitor countries, the reduction in free allocation of emission allowances in Phase III will affect their competitiveness and could lead to a shift in emissions from regions covered by carbon constraints to regions without such regulations. Still, the major emitters in our survey, including the aluminum smelter, stated their overall support for the EU ETS.

Overall, the study's empirical findings agree with much of the recent literature on the subject. They also help alleviate the oft-cited concern that climate policies can lead to significant costs to business and a corresponding loss of market share to companies in countries with laxer environmental laws. To be sure, firms with operations in Europe have made some adjustments since the introduction of the EU ETS and EU climate policies, but their concerns about loss of competitiveness have to date either been unfulfilled or assuaged through policy design.

1 INTRODUCTION AND OBJECTIVES

Project context: Creating an evidence base

The objective of this paper is to inform the current U.S. congressional debate around the effects of a cap-and-trade system on business competitiveness, by providing empirical qualitative evidence of the impacts to date of a similar system in the European Union (EU).

Since 2005, many European businesses—in particular the power sector and energy-intensive industries—have seen their greenhouse gas (GHG) emissions regulated by the European Union Emissions Trading System (EU ETS) and a range of supporting policies and incentives. Together, these provide a useful comparative model for the cap-and-trade system proposed in the American Clean Energy and Security Act of 2009, a landmark bill passed by the U.S. House of Representatives in June 2009. As of August 2009, the U.S. Senate is in the midst of drafting its own version of the bill.

Concerns about the competitiveness of U.S. businesses under such a system echo many of those expressed in Europe just a few years ago, during the lead-up to the implementation of the EU ETS. The EU ETS has now successfully been deployed without evidence of significant adverse impact on sectors or companies—either in the reviewed literature or in the companies surveyed for this study.

Guided by a set list of interview questions (see Appendix), the answers we obtained constitute a sound basis for qualitative analysis of the evidence. Although the survey sample size is relatively small, this mode of qualitative research is useful as it provides a picture of experiences to date of companies affected both directly and indirectly by the EU ETS (Philip, L. et al., 2007).

Survey subject: European businesses under current emissions reduction legislation

We conducted a series of interviews with senior managers at eight corporate emitters with major operations in Europe and one global financial firm. We offered interviewees the possibility of speaking under the Chatham House Rule, which allows the use of information without revealing the identity or affiliation of the speaker, so as to provide a greater degree of openness in the conversation.¹

The companies surveyed represent a wide spectrum of industries, with a particular emphasis on the biggest emitters whose products and services face potential competition from markets currently not subject to carbon constraints and/or carbon pricing. Taken together, they produced around 108 million tons of CO₂ in 2008, or about 5 percent of total verified emissions for all installations covered in the EU ETS (Carbon Market Data, 2009). The respondents include: (1) Centrica, a major U.K.-based utility; (2) Johnson & Johnson, a U.S.-based pharmaceutical and personal care firm with large operations in Europe; (3) Tesco, a leading U.K.-based retailer with global operations; (4) Lafarge, a France-based global leader in cement production; (5) a U.K.-based glass manufacturer; (6) a German-based engineering firm; (7) a global leader in the manufacture of steel; (8) a global aluminum firm; and (9) a global financial services firm that engages in carbon trading. All but one (the glass company) are part of Fortune Magazine's Global 500 ranking of the world's biggest companies for 2009.

Six of the companies interviewed have been both directly covered by and indirectly exposed (through inputs such as electricity) to the EU ETS over the last five years. Three of the companies interviewed had only indirect exposure to the EU ETS (the aluminum company, the retailer Tesco, and the financial services firm).

¹ <http://www.chathamhouse.org.uk/about/chathamhouserule/>

Concerns about the competitiveness of U.S. businesses under such a system echo many of those expressed in Europe just a few years ago.

2 BACKGROUND

Like the EU ETS, the cap-and-trade program is predicated on the distribution of a number of free emission allowances to emitters in the first years of implementation.

State of current legislation in the United States

U.S. policymakers are currently debating proposed legislation to establish a cap-and-trade system to reduce the country's GHG emissions. The House passed the American Clean Energy and Security Act of 2009, also known as the Waxman-Markey Bill after its main authors, U.S. House Representatives Henry A. Waxman (D, CA-30th) and Edward J. Markey (D, MA-7th), on June 26, 2009. The U.S. Senate is drafting similar legislation, which it plans to debate in the fall of 2009.

The Waxman-Markey bill comprises four distinct titles pertaining to (I) clean energy, (II) energy efficiency, (III) reducing global warming pollution, and (IV) transitioning to a clean energy economy. Title III governs the introduction of a cap-and-trade program covering seven GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, and NF₃). The program covers large and small emitters of GHGs such as residential gas distributors, industrial manufacturers, power generators, refiners and oil importers, among others (Pew 2009). The caps envisaged in the bill would lead to GHG reductions of 3 percent below 2005 levels by 2012, 17 percent by 2020, 42 percent by 2030, and 83 percent by 2050.

Like the EU ETS, the proposed U.S. cap-and-trade program is predicated on the distribution of a number of free emission allowances to emitters in the first years of implementation, so as to reduce transition costs, eliminate damaging short-term impacts on company economics and gain political support.

State of the U.S. policy debate

As highlighted by a 2007 working paper prepared by the Nicholas Institute for Environmental Policy Solutions at Duke University, concerns about

negative impacts on U.S. economic competitiveness and associated job loss have been a core explanation for the absence of U.S. federal legislation on climate change until now (Pauwelyn 2007, p. 41).

Since the 1990s, successive legislative debates have focused on such concerns, often expressed most vocally by representatives of industry-heavy states. Opposition to climate legislation culminated in the U.S. Senate's unanimous 1997 Byrd-Hagel Resolution recommending that the Senate not ratify any international climate treaty that did not also mandate reduction targets from developing countries, for fear that such a treaty "would result in serious harm to the economy of the United States" (S. Res. 98, 105th Congress).

This view was based on the conventional wisdom that environmental policies can create so-called "pollution havens" in developing countries, by imposing costs to domestic businesses, thereby slowing productivity growth and hindering "the ability of U.S. firms to compete in international markets. This loss of competitiveness is believed to be reflected in declining exports, increasing imports, and a long-term movement of manufacturing capacity and jobs from the United States to other countries, particularly in 'pollution-intensive' industries" (Jaffe et al. 1995, p. 133).

Recent voices in the U.S. Congress have echoed that concern, warning that "U.S. industry and jobs might relocate to (or expand operations in) countries that do not limit the emissions of their industries, causing ... the U.S. economy to suffer" (U.S. House 2008, p. 1). Closely linked to concerns about jobs and productions is the perceived risk that the environmental effectiveness of a cap-and-trade system could be undermined by carbon leakage—a shift in emissions from regions covered by carbon regulations to regions without such regulations, causing a migration of industry

and related jobs with no net reduction in global GHG emissions.

Evidence so far in the United States and Europe

Recent macroeconomic analysis of the costs associated with constraining carbon emissions has generally shown them to be small (Stern et al. 2006), while estimates of the sectoral and firm-level impacts of cap-and-trade systems vary depending on how much companies are perceived to be able to adapt to changes in relative prices. On the whole, ex-post analysis has shown that costs and competitiveness impacts are almost always lower than initially expected, often significantly so.

Recent research (Aldy et al. 2009; Carbon Trust 2008; U.S. EPA 2009; Ho et al. 2008) suggests that the impact of carbon regulation on competitiveness, jobs, and carbon leakage is likely to be limited both in scale and in the sectors affected. Nevertheless, the issue remains a lightning rod for those opposed to cap-and-trade legislation.

“Regardless of the chosen regulatory mechanisms,” the Heritage Foundation argues in an October 2008 paper, the economic effect of enforced cuts in carbon emissions “will resemble the economic effect of an energy tax, the increase in costs creat[ing] a correspondingly large loss of national income” (Kreutzer et al. 2008, p. 1). With respect to competitiveness, the same authors see such legislation as a driver of increased costs of goods sold, and ultimately detrimental to employment.

Even some economists who generally support a cap-and-trade system believe there is a risk to national industrial competitiveness when such a scheme is adopted unilaterally. A November 2008 paper estimated the likely economic impacts to industry, assuming a price of \$10 per ton of CO₂ (lower than the probable price of U.S. permits), and found “a readily identifiable set of industries is at greatest risk of contraction.” The hardest hit

industries were “petroleum refining, chemicals and plastics, primary metals, and non-metallic minerals” (Ho et al. 2008, p. 39).

Ho et al. were more optimistic over the long-run, however, finding that in spite of relatively large output reductions in the short term, these tend to “shrink over time as firms adjust inputs and adopt new technologies” (Ho et al. 2008, p. 39). In addition, the same study finds that “broader adjustments occur throughout the economy” and that labor markets are able to adjust over the long term, with relatively small losses that “are fully offset by gains in other industries.”

In effect, recent scholarship shows a limited impact of carbon pricing on competitiveness in the short term. In addition to the study cited above, analyses by other authors reinforce this view, including those by Reinaud (2005), McKinsey & Co and Ecofys (2006), the Carbon Trust (2008), Aldy et al. (2009), and Grubb et al. (2009).

And with specific respect to Europe in the early phase of the EU ETS, a comprehensive *ex-post* study by two MIT authors is unequivocal: “the economic impact is imperceptible,” the “European economy has not been ‘wrecked,’” and there has been “no evidence of carbon leakage through trade” (Ellerman et al. 2008, p. 9). Our empirical study largely supports these conclusions.

Recent macroeconomic analysis of the costs associated with constraining carbon emissions has generally shown them to be small.

3 SURVEY FINDINGS

Given the range of industries in our survey, the corresponding range of opinions about the impact of the EU ETS and other climate-related policies comes as no surprise. Some offer unambiguous praise—“we were always supportive of the concept” (one of the larger emitters) and “it has been a positive for our business” (engineering firm)—while other, more energy-intensive industrial companies show greater concern about perceived costs and potential effects on competitiveness.

More striking, however, is that no respondent points to a significant example of a negative impact so far on the bottom-line of their company. Such impacts have either not occurred to date or are too immaterial to register in any meaningfully quantifiable way.

Overall, our survey reveals the companies’ quick grasp of the mechanisms of the EU ETS and, in some cases, of the opportunities it affords them to invest in new assets that will create shareholder value.

1. Companies have found it difficult to quantify effects on their bottom line in the first phase of the EU ETS, or found no effect at all.

Companies tend to fall into one of two categories when assessing the impact of EU climate legislation on their bottom line thus far: (1) “difficult to tell at this point” for four firms including all the building sector companies; or (2) “none for the time being” for the relatively less energy-intensive companies (including the engineering firm). Firms attribute the absence of evidence to one or more of the following explanations:

- The allocation of free emissions allowances in the first phase of the EU ETS (of which there will be less in Phases II and III).
- The relatively low price of carbon.

- The difficulty inherent in disaggregating the price of carbon from that of oil and other commodities.
- The current economic downturn that has slashed product demand, prices or both.

The cement company Lafarge perceives the cost of the EU ETS in the first phase as very limited. In fact, the company has not seen any cost at all in Phase I, but rather a small allowance surplus. However, the economic recovery and the new rules in Phases II and III may change all that: “In sum: today no costs, but tomorrow yes. We think that Phase II will generate substantial costs.”

The retailer Tesco attributes some of the reason for the spikes in electricity prices of the past few years to the EU ETS—but only among a number of other factors, including higher oil and gas prices, and national climate legislation (the U.K. Renewables Obligation and the Climate Change Levy). And while it sounds a positive note about the impact of the EU ETS overall, the company estimates that these factors have had an impact on the bottom line. It should be noted that the EU ETS does not yet cover directly the emissions from retailers.

In fact, when asked whether any costs related to climate and energy policy have been felt directly or through the prices of other inputs, companies invariably mention first that they have noticed higher electricity costs. However, they are largely unable to quantify the climate policies’ distinct impact relative to that tied to increases in the global market prices for oil and natural gas. Still, Lafarge notes broadly that the increase in electricity prices has been greater in Europe than in the rest of the world, implying an effect from carbon pricing, while the aluminum company affirms that the CO₂ cost passed through by power generators is a considerable factor in energy price fluctuations. Other companies mention the price of chemical

inputs increasing as well (soda ash for the glass manufacturer, nitrogen for one of the other manufacturers). The exact cause of this increase is unclear. Finally, the glass company notes that firms' cost estimates often fail to account properly for the administrative expenses related to emissions verification, the adoption of new internal processes, and management time—especially in the early stages of the EU ETS.

2. The impact of the EU ETS is largely in line with prior expectations.

By and large, changes in production costs are in line with what companies had assessed prior to the introduction of the EU ETS in 2005. “I think our estimates were quite good; more or less what we expected them to be” (glass company)—except, that is, for the last year, for which the company didn't anticipate the extent of the energy price increases due to oil and gas price fluctuations. Another company estimates that in the first 18 months of the EU ETS, costs were probably around the level they had anticipated, but that the energy price peaks of the last year were *not* expected.

Companies are having a difficult time disaggregating potential carbon-related cost increases from those attributable to other factors, such as the increase in energy prices or changes in the operating environment. The steel company sees the exercise as “very difficult... Raw materials have been jumping up and down—iron ore specifically. All prices have.” At least one other company expressed a similar view.

In the first phase of the EU ETS, according to the glass company, free allocation of allowances has blunted the effect of carbon pricing on its cost base. It notes that the biggest impact on its production has been the recent economic downturn, which has slashed EU glass production by about half. And because the delicate nature of glass manufacture

requires most furnaces to run at all times to avoid structural damage to the float plant, its energy consumption has *not* followed the slowdown in production. “All other effects are being swamped by the credit crunch” (glass company).

3. Although costs for some firms are increasing, there is scant evidence of effects on competitiveness—but concerns about the future persist, especially as the number of free allowances decreases and CO₂ costs are reflected in electricity prices.

When asked about effects on the competitiveness of their business, respondents are hard pressed to point to a specific instance of lost market share. The steel and aluminum companies state explicitly that “yes, the EU ETS is affecting the competitiveness of our European operations,” without, however, providing any further detail of how and to what extent. And while Lafarge states that so far there have not been any impacts, it is concerned about the effects of absorbing the full price of emissions allowances:

“There is a risk of impact on the competitiveness of our business in the future. We estimate that if 100 percent of the cost of carbon were reflected into our production costs, that would effectively double our production costs.”

More than the other energy-intensive companies surveyed, the aluminum smelter emphasizes the indirect impact of higher electricity prices from power generators passing through the CO₂ cost. Aluminum smelting is arguably the most electricity-intensive process among the sectors in our survey—and one whose direct emissions are not covered by the EU ETS. The smelter warns that the expiration of existing long-term electricity purchase contracts and the negotiation of new contracts that take carbon pricing into account could lead to significant costs in the coming

Companies are having a difficult time disaggregating potential carbon-related cost increases from those attributable to other factors, such as the increase in energy prices or changes in the operating environment.

EU climate legislation “has moved the climate debate into the boardroom.”

years. It expects these costs to increase in Phase III with higher CO₂ allowance prices, which could undermine its ability to compete. Although by no means the sole or even main consideration, the respondent considers that carbon pricing may have already been a contributory factor in the few cases of aluminum smelting plant closures in Europe.

Some of the companies surveyed are concerned about their limited ability to pass on cost increases to consumers. The aluminum company cannot pass on costs because its product is priced in a continuous process on the global commodity market (the London Metals Exchange). The price of glass is too set by the commodities market, and has dropped by half over the last year. However, the glass company has added a new surcharge for delivery, which has helped to recover cost increases related to the EU ETS. Transportation costs for glass are relatively low, so it believes that competitiveness impacts and carbon leakage could become real threats, should output prices rise to reflect the true costs of emissions allowances. The respondent believes the industry needs free allowances to protect glass production in Europe in Phase III.

Another, less energy-intensive company shared that the EU ETS has not negatively impacted its competitiveness. “The increases in costs were limited. And effects on competitiveness were not felt.” In fact, the EU ETS has helped it improve its energy efficiency and transfer best practices to other geographical units: “global operations are looking to us as a model to emulate, for instance from an energy accounting standpoint. I don’t see much of a negative aspect in the introduction of an ETS.” In fact, the respondent mentions that the European operations have attracted additional company capital expenditure.

4. Companies have not relocated their operations during Phase I of the EU ETS.

Relocation of operations is not yet on the agenda of the companies surveyed, at least in part due to a lack of data on the financial impact of Phase I, according to the steel company. Lafarge agrees: “Because a cement plant has a lifecycle of 30–40 years, and because we have not yet seen an impact on costs, we have not yet made a decision” regarding future plant location. But the respondent anticipates that carbon pricing will be a key element in future plant investment decisions.

Two companies describe the relocation of their facilities as impractical. For instance, Tesco is not subject to relocation and leakage, as its main customer base would be very unlikely to cross the Channel to shop for cheaper products.

The glass company acknowledges that manufacturing in the vicinity of its customers makes environmental sense in addition to providing other practical and financial benefits. For instance, a limited proportion of its production of glass for photovoltaic cells has shifted to Malaysia: “the EU ETS is a factor, energy costs are lower there, but also it is closer to the main PV manufacturers in South East Asia.”

5. A market price for carbon has a relatively low impact on how top management runs its business.

When asked whether policies that place a price on carbon have led to fundamental changes so far in the way they run their business, managers tend to answer first that it “has not very much” (engineering company) or “not really in the period since the introduction of the EU ETS” (Lafarge). When answering more specific questions about their product mix, the balance of other factors such as energy cost increases, or future strategic

planning decisions, the respondents are generally more nuanced.

This slight cognitive dissonance is normal. The overall picture is one in which top management is able to continue focusing on the core competencies of its business, while the organization as a whole becomes more adept at internalizing a host of evolving circumstances. These do include the effect of a market-set price for carbon, alongside ever-present factors like peaks and troughs in the business cycle, changing costs of inputs, and evolving consumer tastes. Each of these factors can have an effect on the types of decisions we asked about in the survey: (1) top management decision-making, (2) process and/or product specifications, (3) input mix, and (4) changes in energy supply.

For instance, most companies acknowledge broadly that higher electricity costs—leading to either higher costs of goods sold to consumers, or slimmer margins for firms—have affected some business processes over the last year, especially for manufacturers of energy-intensive products like glass or cement. But for most, like the glass company, carbon pricing is not seen as having as significant an impact in changing management decision-making processes over time.

6. But companies are quick at internalizing the EU ETS into their strategic planning.

While some variance in the avowed original support for the EU ETS is noticeable, our study finds that most companies surveyed have adjusted rapidly to the new environment. At least two companies state that they have “always [been] supportive of the concept,” while another, less energy-intensive company is candid about its early skepticism: “At first, we thought EU ETS would die quietly after 2–3 years—but it didn’t.” The respondent has seen a gradual change in

attitudes. Now “management really supports the EU’s goals on climate change. Our CEO has sent letter of support of the 20-20-20 policy to the EU Commission,” referring to the European package on climate change measures that mandates a 20 percent reduction of GHG emissions by 2020.

The glass company also believes that management teams have adapted to the reality of the EU’s climate policy: “it’s not peripheral. It is there and in their minds. And this happened pretty quickly.”

The financial analyst confirms this shift in management awareness. He argues that EU climate legislation “has moved the climate debate into the boardroom.”

“The main change has been in attitudes toward climate legislation. Companies aren’t saying ‘it’s a complete disaster’ anymore. We see a bit of that positioning now in the U.S. and Australia, where similar legislation is being considered. But you don’t tend to get that response in Europe anymore. Companies see lots of opportunities to invest in new assets and create shareholder value.”

For the aluminum company, this trend may have started even earlier, following the 1992 UN Earth Summit in Rio de Janeiro—well in advance of EU ETS Phase I—with the company’s recognition that climate change was going to be a main driver of businesses’ strategic planning decisions.

7. Short-, medium-, and long-term effects on strategic planning vary.

When asked about differences between the short-term and likely medium-term impacts of the EU ETS and other climate and energy policies on strategic planning, respondents vary quite a bit in their assessment. At least one of the companies surveyed sees no distinction, in that management has been broadly supportive of the EU ETS and

“At first, we thought EU ETS would die quietly after 2–3 years—but it didn’t.”

“Carbon pricing is here and is working, and we are supportive of it. It has the effect of leading toward lower carbon investments.”

has adjusted short- and medium-term strategic planning accordingly. Another respondent displays similar optimism: “Carbon pricing is here and is working, and we are supportive of it. It’s something we take into account for future investments. It has the effect of leading toward lower carbon investments. That’s the direction we’re headed in.”

In terms of cost-based decisions and investments for the future, the same respondent believes that in the short-term, the price of carbon does not always properly reflect the long-term requirements for companies in the sector. Lafarge believes that the medium-term effects must be priced into its long-term strategic decisions because of (1) the lengthy life-cycle of cement facilities and (2) the built-in durability of the EU ETS.

The steel company believes the long-term impacts of the EU ETS will depend on how other industries react, for instance the power industry. It anticipates a significant financial impact could come from a tighter emissions cap and fewer free allowances.

8. Cost mitigation measures often begin with investments in energy efficiency.

To limit production costs, at least one company has decided to focus on reducing energy intensity as much as possible. The avowed objective is to “increase our energy efficiency; reduce our energy consumption. This is because of EU ETS.” Similarly, the engineering firm deems it important to reach energy efficiency targets and reduce its own environmental impact: “because we deliver products and solutions that will assist customers in reducing their impact on the environment, we feel obligated to minimize our own carbon footprint.”

The glass manufacturer is making ongoing investments in energy efficiency and is looking very carefully at lower carbon fuels. The company is also looking to use more recovered and recycled glass.

The aluminum company highlights the progress the industry has made of late, with “overall energy efficiency of aluminum smelting having improved 6 percent between 1990 and 2007.

As a result of its commitments to reduce emissions, Tesco is rolling out “lots and lots of energy efficiency work” in its stores and distribution network. These include smarter, more energy-efficient store design as well as improved logistics and supply chain management in distribution. In addition, the size of its truck fleet has remained constant over the last three years while the number of stores has increased, partly because it introduced double-decker trucks and purchased two trains.

9. Carbon pricing encourages future investments in renewable energy.

At least three of the companies (Lafarge, Tesco, and the glass manufacturer) indicated that the price of emissions allowances, along with the cost savings from more energy efficient operations, contributed to their decision to invest in low-carbon sources of energy, for instance renewable electricity or combined heat and power for the glass manufacturer.

The companies generally describe increases in energy costs as a more important factor than the price of carbon in these investments. These increases stem from European-wide policies, as well as from national legislation, such as the U.K.’s Renewable Obligation, which incentivizes investment in renewables.

Furthermore, they have increased overall investments in research and development to diversify their energy supply. For the steel company, on the other hand, carbon pricing has not had a great impact on decisions to invest in low-carbon alternatives, because of the low price of carbon allowances.

New business processes inspired by climate legislation tend to spread from one plant location to another within the same firm. For example, Tesco's internal climate change program has been implemented throughout its global operations. Some executives take pride in adopting innovative practices that are replicated in other parts of the company: "[operations in] other countries look to us for energy efficiency standards." Another company, the steel manufacturer, notes that should a product mix or process change happen due to climate legislation, it would apply such changes to its other geographical units. The respondent also points out that countries often copy legislation and that it is necessary to anticipate the emergence of trading schemes in other jurisdictions.

10. Carbon pricing has prompted some companies to green their product mix.

Carbon pricing has led some companies to change their product mix, with an emphasis on new energy standards and a greener product line. "Countries around Europe are aligning their energy and buildings policies ... and we can make special products to enhance that" (glass company). Together with heightened consumer awareness, the introduction of climate legislation provides manufacturers with opportunities to market new products such as low-emissions glass for glazing and low-iron glass for photovoltaics (glass company), or energy efficient light bulbs (engineering company). Both companies perceive this development as a net positive for them, as customers are responding very well to the new products. The same goes for Tesco, which has been able to reduce its price point for energy-saving light bulbs, adapters, and insulation due to the U.K.'s Carbon Emissions Reduction Target.

Lafarge and the steel company anticipate only minor changes in their product mix, given that these industries achieved rapid efficiency gains

and technological innovation from 1990 to 2005. Cement and aluminum firms considerably reduced GHG emissions over this period. For instance, emissions of perfluorocarbons (PCFs) from aluminum production fell by about 90 percent per unit of output between 1990 and 2007. At the same time, promising new technologies like ultra-low CO₂ steelmaking are still some years from hitting market.

Most companies note that EU ETS regulations are among many factors that determine processes and products; others include internal company policies (most companies), the chief executive's personal commitment (Tesco), brand value (Tesco, again), and the impact of non-European national jurisdictions (Lafarge mentioned the new energy efficiency push in China's industrial policy).

11. Getting smarter: better monitoring and cost assessment.

Companies have become more adept at taking into account the various policy options on the horizon. For instance, the steel company has evaluated the relative impact of free allowances versus border tariffs on imports from countries that have not adopted limits on carbon emissions, concluding that the latter would not pass muster under the World Trade Organization.

Strikingly, most firms surveyed have stepped up plant-level monitoring and cost-assessment capabilities. Thus the glass company:

"We have increased monitoring to an extent way beyond anything in the past—down to monitoring individual pieces of equipment. And it all adds up, and overall energy consumption is reduced. Knowing information helps us control it better. All investment decisions now have a carbon account associated with them.... We do also have a trading desk to look at the financial implications."

"All investment decisions now have a carbon account associated with them."

And Lafarge:

“The first measure was a very precise calculation of our emissions for each one of our facilities and our new technical investments, so as to understand everything that was going on. The second measure was to make every plant manager aware of what this meant in terms of their daily work. The third measure was to work the anticipated price of carbon into all of our future calculations, in terms of production costs, new investments, etc. A new cement plant will last us 30–40 years, so it’s important to get things right early.”

12. Policy measures have helped to mitigate competitiveness impacts.

When asked if any of the provisions of the EU ETS and other climate and energy legislation have helped safeguard their competitiveness, most companies point to the allocation of free allowances as a generally helpful policy that has helped alleviate cost increases. However, one of the larger emitters surveyed estimates that it has probably suffered negative effects from the free allocation of allowances in the initial phase, arguing that free allowances based on historic emissions effectively “reward higher polluters. We are a lesser polluter.”

The last respondent’s comments underscore the delicate line the EU ETS must toe as it aims to incentivize individual companies to reduce the carbon intensity of their operations while easing their concerns over competitiveness. To that end, the EU ETS’s combination of carrots (some early free allowances) and sticks (the tightening cap overtime) allows a gradual shift in the burden of action away from the overall sectors and toward individual companies—and even individual company plants.

Respondents mentioned other policy measures with a positive impact: the glass manufacturer seems to have benefited from tax rebates for companies using low-carbon electricity (the U.K.’s Climate Change Agreements) and at least two companies alluded positively to the EU Directive on Energy Performance of Buildings and energy efficiency certification schemes. The glass company also values its participation in the Emissions Trading Group, a forum that brings together U.K. government regulators, commerce, and industry (representing 95 percent of U.K. carbon emissions covered by the EU ETS). The group enables informal consultations and resolutions under the Chatham House rule—something that the glass company believes would be very useful if replicated at the European level and in the United States. Meanwhile, Lafarge notes the constructive discussions that took place between businesses and the European Commission and Members of the European Parliament on the issue of leakage as part of negotiations around the December 2008 EU climate and energy package.

According to the steel company, the use of credits from the Clean Development Mechanism (CDM, the Kyoto Protocol’s instrument for financing low-carbon projects in developing countries where carbon abatement can be achieved at lower cost) in the EU ETS would lower their costs. The company concedes that the European Commission’s current rules restrict the use of CDM credits in the EU ETS—yet understands the EU’s reasoning: “to avoid CDM undercutting the EU carbon market.”

The aluminum producer expressed a different view but with similar conviction:

“We strongly support a carbon trading mechanism. We had expected to be included in Phase I and anticipated appropriate recognition in allocation for our early action. We would have been perfectly comfortable being included. This now is all water under the bridge.”

13. Assumptions, concerns and hopes for the next phase: free allowances...

In considering their hopes and assumptions for the future, most respondents bring up allocation. And most of those who do are hopeful that free allocation will continue—with one notable exception from among the large emitters:

“We would be pleased to see a removal of [freely allocated] allowances, since the cost pass-through of carbon into the wholesale power price creates significant distortive effects in the competitive generation sector. Free allowances should only be considered for sectors where it can be clearly demonstrated that cost pass-through is prevented due to international competition from regions without similar carbon reduction regulations.”

The glass company would like to see free allowances and protection from carbon leakage as well as a link between the performance of products and carbon investments, or, as the respondent puts it, “carbon credits for carbon savings.” Another, less energy-intensive, company has a similar request:

“Along with the chemical companies in Europe, we hope that the EU will maintain the link between demonstrable energy efficiency gains and the allocation of rights. Buying all of the allowances on the open market will be a premium for our business. We hope we can avoid that by keeping the link.”

The steel company echoes that concern, and calls for “a fair amount of allowances for free as long as there is no global agreement.” It fears that without a global level playing field, it may end up not being competitive for some plants. In this context, most companies believe that (some) free allocation for intensive energy users is a more acceptable way than trade measures to mitigate competitiveness

effects until all firms face the same constraints. The aluminum company, for example, shares the reservations of other firms about border tariffs and instead supports free allocation based on rigorous, environmentally sound benchmarks.

While it is broadly supportive of the current system, Lafarge shares this concern, cautioning against the long-term consequences of an “EU-only ETS” for an industry in which Europe represents only 10 percent of worldwide production:

“We need a harmonized global regime.... or else there will be distortions. And we see that as damaging to both our industry and the environment.... Political boundaries are not the same as business boundaries.”

The cement company also calls for a broader sectoral agreement among the building industries (glass, steel, etc.) to address the growing emissions from the sector as a whole. The glass company agrees.

14. ...And better consultation.

The survey reveals that, as companies familiarize themselves with the EU ETS and improve their internal monitoring, they have been able to engage productively with the EU authorities to refine the system. For example, in the EU ETS's next phase, at least two companies (including Tesco) would like to see some form of EU recognition of efforts made on sustainability certification for facilities and buildings. The aluminum company would have preferred a policy of free allowance allocation to compensate for the CO₂ cost passed through electricity pricing, focusing on best practices in electrical consumption. Still, it supports the current provision in the EU ETS for cash compensation for indirect emissions—and it expects to be consulted on the development of the electricity use factors for that compensation. And the glass company wants

“We hope that the EU will maintain the link between demonstrable energy efficiency gains and the allocation of rights.”

“We know [the EU ETS] will last. We know it must. And we think that the United States will implement a comparable system that will also be there for the long-haul.”

the EU to reward the environmental contribution of energy-intensive green products like double-glazed windows and PV glass.

“We need the right infrastructure and support in the short term (two or three years) otherwise we will miss the boat in Europe. Energy saving policy and building regulations have the biggest effects on industry. We would advocate more stringent regulation to ensure construction takes place to the best standards.”

Echoing the broad concern of others surveyed, Tesco would like to see European and national authorities “simplify and clarify their overwhelmingly complicated policies” and the way they relate to each other. The retailer aptly sums up the surveyed companies’ “message to the U.S.: Do it in a coherent way across the U.S., not in a patchy way. There is an opportunity to do it effectively. Think it through.” The glass company, among others, believes that a global system is the best safeguard of competitiveness and is hopeful that an agreement is possible on the issue in Copenhagen.

By and large, companies stress the importance of emissions mitigation measures at the EU or national level. In effect, most companies have adapted quickly to the introduction of carbon pricing and emissions trading. And equally quickly, according to Lafarge, they have learned how “to use the regulatory framework in an intelligent manner in order to develop [their] activities.” In one way or another, companies see the EU ETS as a long-term given: “We know it will last. We know it must. And we think that the United States will implement a comparable system that will also be there for the long haul” (Lafarge).

4 CONCLUSIONS

This report gives context to the current debate around the introduction of a cap-and-trade system in the United States. The question we sought to answer was whether comparable policies in Europe have had any significant negative impacts on the competitiveness of European businesses. Economic analysis has shown that these impacts are likely to be small.

The evidence presented in this study backs up the recent economic literature. This report shows that while the establishment of a price for carbon has affected all the companies surveyed, in no case so far has there been a material impact on their competitiveness. In some cases, there have been positive effects. Yet some concerns persist for the future, particularly among heavy industrial companies who worry that—in the absence of a more comprehensive international climate change agreement—the reduction of free allowances in the EU ETS Phase III will expose them to an uneven competitive regime and lead to carbon leakage.

Some points that we touched upon are worth highlighting for further scrutiny:

- ***The EU ETS has not resulted in a significant cost to business, especially when compared to the impact of other factors such as energy price fluctuations and the economic downturn.*** Among companies whose direct emissions are covered by the EU ETS, none was able to quantify any negative impact on the bottom line. What costs the companies saw in the initial phase of EU ETS were largely in line with what they assessed prior to the introduction of cap-and-trade. And, more recently, in the words of one respondent, “all other effects are being swamped by the credit crunch.”
- ***The indirect impact of electricity prices on electricity-intensive companies should be taken into consideration by policymakers.*** Some of the companies surveyed are concerned about their limited ability to pass on cost increases to consumers. For instance, the aluminum and glass companies’ products are priced in a continuous process on the global commodities markets.
- ***Companies have not relocated their operations as a result of carbon pricing or climate legislation.*** This suggests that carbon pricing is a minor consideration when compared with other factors determining production location decisions, such as proximity to suppliers and customer base, transport costs, availability of skilled labor and research capacity. None of the companies interviewed has cut jobs or shut down operations as a direct result of climate-related policies. And their financial performance and global market share have not changed relative to their competitors.
- ***Company decision-making has taken carbon pricing on board but not led to fundamental shifts in strategy.*** Cap-and-trade, by putting a market price on carbon emissions, has moved the climate debate into the boardroom and the decisions of senior management, but it has not profoundly altered the way management teams run their businesses. Companies are becoming smarter about their day-to-day operations and future strategic choices, taking into account likely future shifts in policy and consumer demand.
- ***Companies have improved their monitoring and reporting of emissions and realized energy efficiency gains.*** At an operational level, a market price for carbon has led companies to improve the way they monitor and report

their production costs. Both because of legislation and because it makes good business sense, companies are paying more attention to energy efficiency and seeing financial benefits as a result. And some are shifting to greener product lines in response to demand from other sectors.

- ***In spite a few rough edges, companies find much to be commended under the four year-old EU ETS.*** Overall emissions from corporations have fallen, and companies are achieving gains in energy efficiency, and creating new and greener product lines. Yes, there are some elements of pressure on their operations and cost structures, but, as the financial analyst put it, “in the future our expectation is that the impact will be felt increasingly. That’s necessary if you want to see a change in behavior. That will be the difference between the companies that are successful and those that are not.”
- ***The prospect of a new cap-and-trade regime for greenhouse gas emissions in the United States seems daunting, but the experience of the EU ETS shows that it is feasible*** even if it requires some mitigating measures at the outset, such as free allocation of allowances. While they do not rule out future impacts if carbon prices rise and other countries do not adopt similar legislation, companies believe that allocation of free emission allowances and better consultation with EU authorities has helped mitigate any potential negative impacts on competitiveness in the early phase. They are likewise optimistic that the United States can achieve success in designing its cap-and-trade system in a coherent and holistic way. “There is an opportunity to do it effectively,” according to one respondent.

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A APPENDIX: INTERVIEW QUESTIONS

Effects on decision-making

1. Has the introduction of carbon pricing led to significant changes in the way you run your business, e.g., process and/or product specifications, input mix, change in energy supply, etc.?
2. Have any changes to operational processes (as above) been implemented in facilities in other regions of the world (aside from the EU)?
3. Has carbon pricing led you to invest in low-carbon alternatives to your previous inputs, processes or products?
4. Have other policy incentives had a greater or lesser impact?

Effects on costs

5. What, if any, impact has the EU ETS and other climate and energy policies had on your bottom line?
6. Have any costs related to climate and energy policy been felt directly or through the prices of other inputs, e.g., electricity?
7. Were any costs in line with what your company anticipated they might be prior to the introduction of the EU ETS? Were they greater? Smaller?
8. How do any carbon-related costs increases compare to other changes a) in the costs of inputs and b) in the operating environment?
9. What measures have you introduced to address any carbon-related costs?
10. Have you passed on any additional costs to your customers?

Effects on competitiveness

11. Have the EU ETS or other climate-related policies had any negative or positive impacts on the competitiveness of your business? If so, please explain.
12. Have the EU ETS or other climate-related policies led to relocation of any of your businesses operational facilities?
13. What aspects of the EU ETS or other climate and energy policies, if any, have helped to safeguard your company from any negative impacts on your company's competitiveness?

Effects on strategic planning

14. Are there differences between the short-term and likely medium-term impacts of the EU ETS or other climate and energy policies?
15. Have you experienced a change in attitude towards the EU ETS since its introduction and implementation?
16. What are your assumptions regarding the next phase of the EU ETS? And how will that affect your business performance and strategic choices?
17. What other policy measures, if any, would help to ensure the desired environmental outcome while safeguarding the competitive position of companies in your sector?

Sector-specific question

Question to Electricity/Power Utilities:

18. Has the introduction of the EU ETS had an impact on your company's plans regarding closure of older facilities or regarding new capital expenditure (e.g. construction of new plants, etc.)

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